



User's Manual

aero 12



Antes de utilizar el equipo, lea la sección "Precauciones de seguridad" de este manual. Conserve este manual para futuras consultas.

Before operating the device, please read the "Safety precautions" section of this manual. Retain this manual for future reference.

CONTENTS

SAFETY PRECAUTIONS	3
WARRANTY	4
DECLARATION OF CONFORMITY	5
SYSTEM DESCRIPTION	6
LINE DRAWINGS	6
CONNECTION	7
SPECIFICATIONS	8
CONFIGURATION	9
RIGGING SYSTEM	10 to 13
TROUBLESHOOTING	14

Caja acústica pasiva / Passive loudspeaker enclosure

El signo de exclamación dentro de un triángulo indica la existencia de importantes instrucciones de operación y mantenimiento en la documentación que acompaña al producto. Conserve y lea todas estas instrucciones. Siga las advertencias.



The exclamation point inside an equilateral triangle is intended to alert the users to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product. Heed all warnings. Follow all instructions. Keep these instructions.

El doble cuadrado indica equipo de Clase II.



The double square indicates Class II device.

Las especificaciones se encuentran en la etiqueta de la parte posterior del producto.

The specifications can be found on the rear label of the product.

Equipo IP-33 según la norma IEC 60529:1989 + M1 @ 1999

IP-33 equipment (IEC 60529:1989 + M1 @ 1999)

Este símbolo indica que el presente producto no puede ser tratado como residuo doméstico normal, sino que debe entregarse en el correspondiente punto de recogida de equipos eléctricos y electrónicos.



This symbol on the product indicates that this product should not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment.

Equipo diseñado para funcionar entre -25°C y 70°C. La humedad relativa máxima es del 95% con 40°C de temperatura ambiente.

Working temperature ranges from -25°C to 70°C. The maximum relative humidity of 95% with ambient temperature 40°C.

El cableado exterior conectado al equipo requiere de su instalación por una persona instruida o el uso de cables flexibles ya preparados.

The outer wiring connected to the device requires installation by an instructed person or the use of a flexible cable already prepared.

El equipo cuenta con un conector de entrada preparado para facilitar la conexión de varias cajas en paralelo.

Note that the an input connector is prepared to provide easy parallel connection of several enclosures.

No emplace altavoces en proximidad a equipos sensibles a campos magnéticos, tales como monitores de televisión o material magnético de almacenamiento de datos.



Do not place loudspeakers in proximity to devices sensitive to magnetic fields such as television monitors or data storage magnetic material.

El colgado del equipo sólo debe realizarse utilizando los herrajes de colgado recomendados y por personal cualificado. No cuelgue la caja de las asas.

The appliance should be flown only from the rigging points and by qualified personnel. Do not suspend the box from the handles.

No existen partes ajustables por el usuario en el interior de este equipo. Cualquier operación de mantenimiento o reparación debe ser realizada por personal cualificado. Es necesario el servicio técnico cuando el equipo se haya dañado de alguna forma, como que haya caído líquido o algún objeto en el interior del aparato, haya sido expuesto a lluvia o humedad, no funcione correctamente, haya recibido un golpe o su cable de red esté dañado.

No user serviceable parts inside. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally or has been dropped.

Limpie con un paño seco. No use limpiadores con disolventes.

Clean only with a dry cloth. Do not use any solvent based cleaners.

GARANTÍA

Todos nuestros productos están garantizados por un periodo de 24 meses desde la fecha de compra.

Las garantías sólo serán válidas si son por un defecto de fabricación y en ningún caso por un uso incorrecto del producto.

Las reparaciones en garantía pueden ser realizadas, exclusivamente, por el fabricante o el servicio de asistencia técnica autorizado.

Otros cargos como portes y seguros, son a cargo del comprador en todos los casos.

Para solicitar reparación en garantía es imprescindible que el producto no haya sido previamente manipulado e incluir una fotocopia de la factura de compra.

WARRANTY

All D.A.S. products are warrantied against any manufacturing defect for a period of 2 years from date of purchase.

The warranty excludes damage from incorrect use of the product.

All warranty repairs must be exclusively undertaken by the factory or any of its authorised service centers.

To claim a warranty repair, do not open or intend to repair the product.

Return the damaged unit, at shippers risk and freight prepaid, to the nearest service center with a copy of the purchase invoice.



DECLARACIÓN DE CONFORMIDAD DECLARATION OF CONFORMITY

D.A.S. Audio, S.A.

C/ Islas Baleares, 24 - 46988 - Pol. Fuente del Jarro - Valencia. España (Spain).

Declara que *aero 12*:

Declares that *aero 12*:

Cumple con los objetivos esenciales de las Directivas:

Abide by essential objectives relating Directives:

- Low Voltage Directive 2006/95/EC
- Regulation (EU) No 305/2011 - Construction Products

Y es conforme a las siguientes Normas Armonizadas Europeas:

In accordance with Harmonized European Norms:

- EN 60065:2002 Audio, video and similar electronic apparatus. Safety requirements.
- EN 54-24:2008 Fire detection and fire alarm systems. Part 24: Components of voice alarm systems. Loudspeakers.

SYSTEM DESCRIPTION

The **æro 12** compact line array system joins the family of professional sound touring products **æro series**®.

The system incorporates an impressive battery of high tech features that take compact line array systems to an unprecedented level of performance. The latest optimized D.A.S. components have been combined with enclosures designed for rapid deployment, precise coverage and high acoustic output.

The **æro 12** incorporates a D.A.S. **12LN4C**, 12" low frequency transducer. The transducer employs a 75 mm (3") voice coil and neodymium magnet motor assembly. Effective heat evacuation is achieved by way of the Total Air Flux (TAF) cooling scheme which permits high power handling and low power compression.

High frequency reproduction relies on the exceptional characteristics of the new D.A.S. **M-75N** neodymium compression driver designed for use in applications where high SPL and low distortion are required. A pure titanium diaphragm featuring a 75 mm (3") copper-clad, aluminium flat-wire voice coil yields high sensitivity, low distortion and extended frequency response. Each motor system has a copper shorting ring surrounding the pole piece which effectively reduces eddy current induced distortion with the added benefit of increasing the very high frequency output by reducing the inductive rise of the voice coil. The driver is attached to a new **BPS-9010** aluminium waveguide-horn assembly.

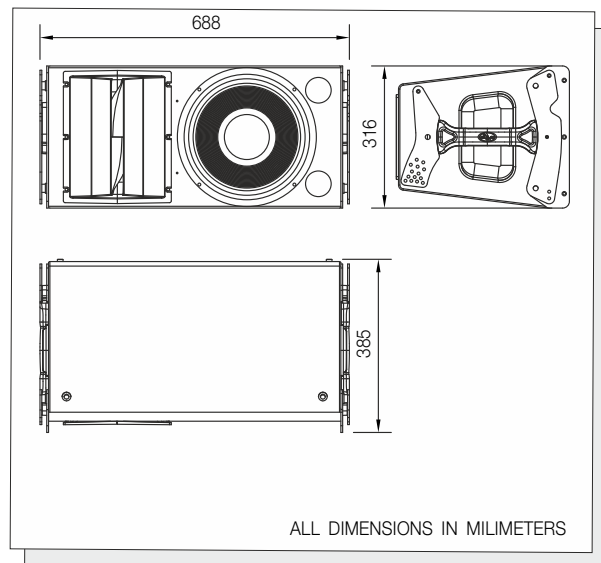
The **PL-12S** (steel transporting dolly) and **AX-aero12S2** (rigging bumper) accessory allow for any type of flown of the **æro 12** system.

The easily portable and rugged enclosure is manufactured using Birch plywood and finished with a durable black paint. The **æro12's** trapezoidal shape and rear located splay angle adjusters keep the front spacing between adjacent elements the same, providing the array with a "seamless" front baffle, for improved array performance. The captive rigging system splay angles range from 0° to 10° and can be adjusted in 0.5° increments from 0° to 3°, and 1° increments from 3° to 10° allowing a wide range of column curvatures to be accomplished.

The **æro 12** complies with the european standard **EN54-24** for using as voice alarm device for fire detection and fire alarm systems.

The **æro 12** also guaranties the best performance under harsh weather conditions.

LINE DRAWINGS



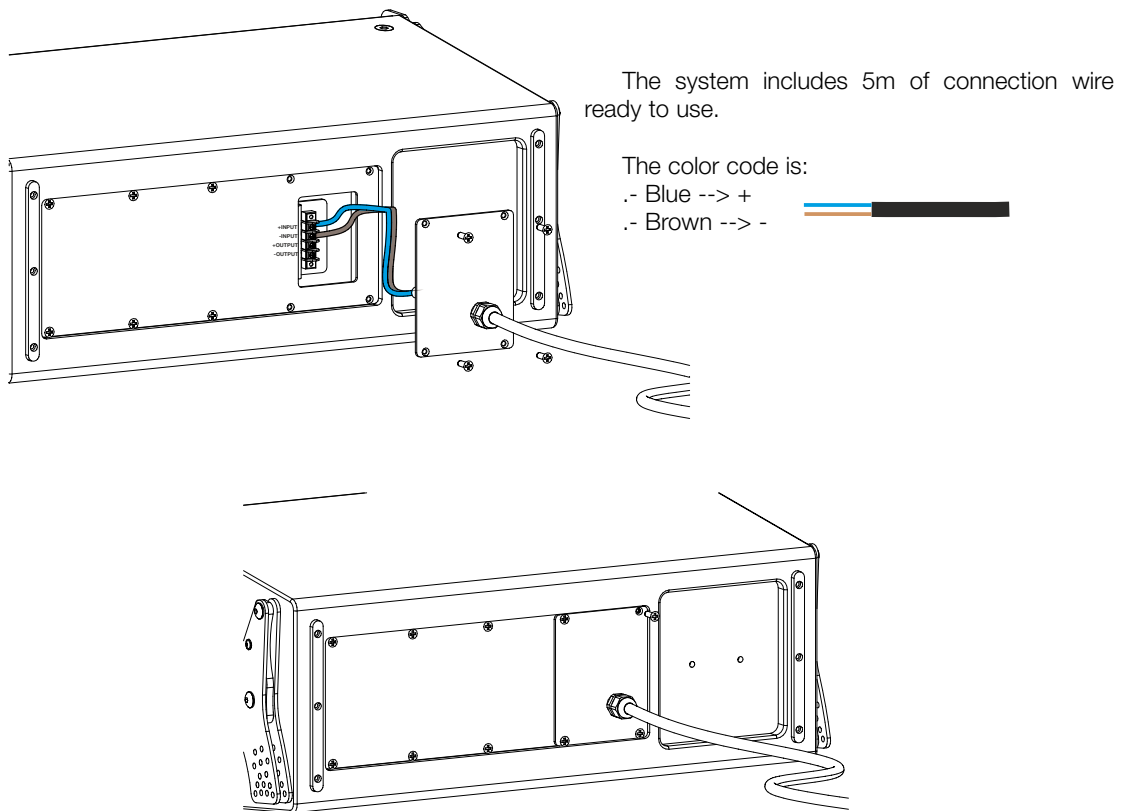
CONNECTION

The *aero 12* can be used as a full range cabinet in voice applications or any application requiring high SPL.

The amplifier unit is not in the cabinet so the connection has to be made. The user needs to connect the amplifier's output to the input connector of the *aero 12* cabinet. The connection has to be made with the amplifier unplugged.

The *DSP-2060* Digital Signal Processor is recommended for setup. This processor includes a specific factory preset for the *aero 12* optimizing the system's performance.

The connection is made on the rear panel of the cabinet by way of a barrier strip connector.



After installation, do not remove any safety panels while the system is in use. Service and/or technical operations should be performed only by authorized personnel.

Follow the amplifier's user manual for the amplifier connection.

SPECIFICATIONS

Technical specifications

Model	aero 12		
RMS Power Handling ^f	400 W		
Program Power Handling ^f	800 W		
Peak Power Handling ^k	1600 W		
On-axis frequency Range	62 Hz - 22 Hz		
Nominal Impedance	8 Ohms		
Minimum Impedance	7,4 Ohms @ 140 Hz		
On-axis Sensitivity 1W/1m	100 dB SPL		
Peak SPL at Full Power	132 dB SPL		
Nominal -6dB Beamwidths	90° Horizontal x 10° Vertical		
Enclosure Material	Birch Plywood		
Color/Finish	Black / Polyurea		
Transducers/Spare Parts	LF: 1 x 12LNC/GM 12P HF: 1 x M75N/GM M-75N		
Connector	Barrier strip		
Dimensions (H x W x D)	31,6 x 140 x 60 cm 12,4 x 55 x 23,6 in		
Net Weight	27 kg (59,4 lbs)		
Accessories	AX-aero12 Rigging Grid AX-Combo12 Rigging Adapter KITGS-AX-aero12 PL-12S Steel Stacking Dolly		
DSP2060A EQ	Frequency	Q	Gain
	6k11	0,5	-5
	2k52	4,3	-2,9
	6k47	4	-3
	14k3	6,7	-5

EN54-24 based Technical specifications

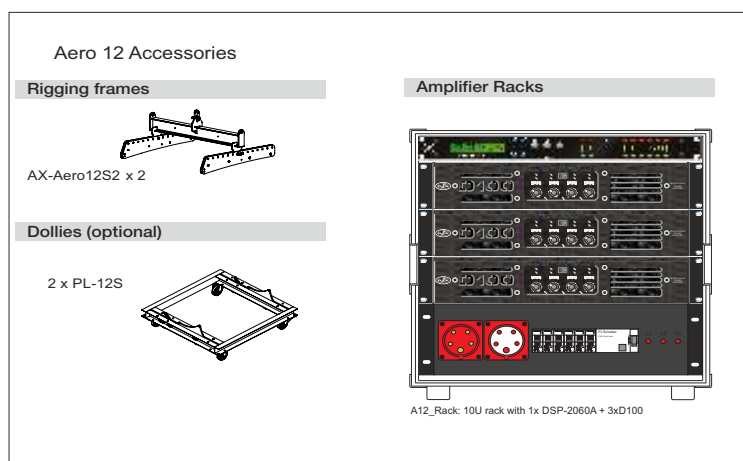
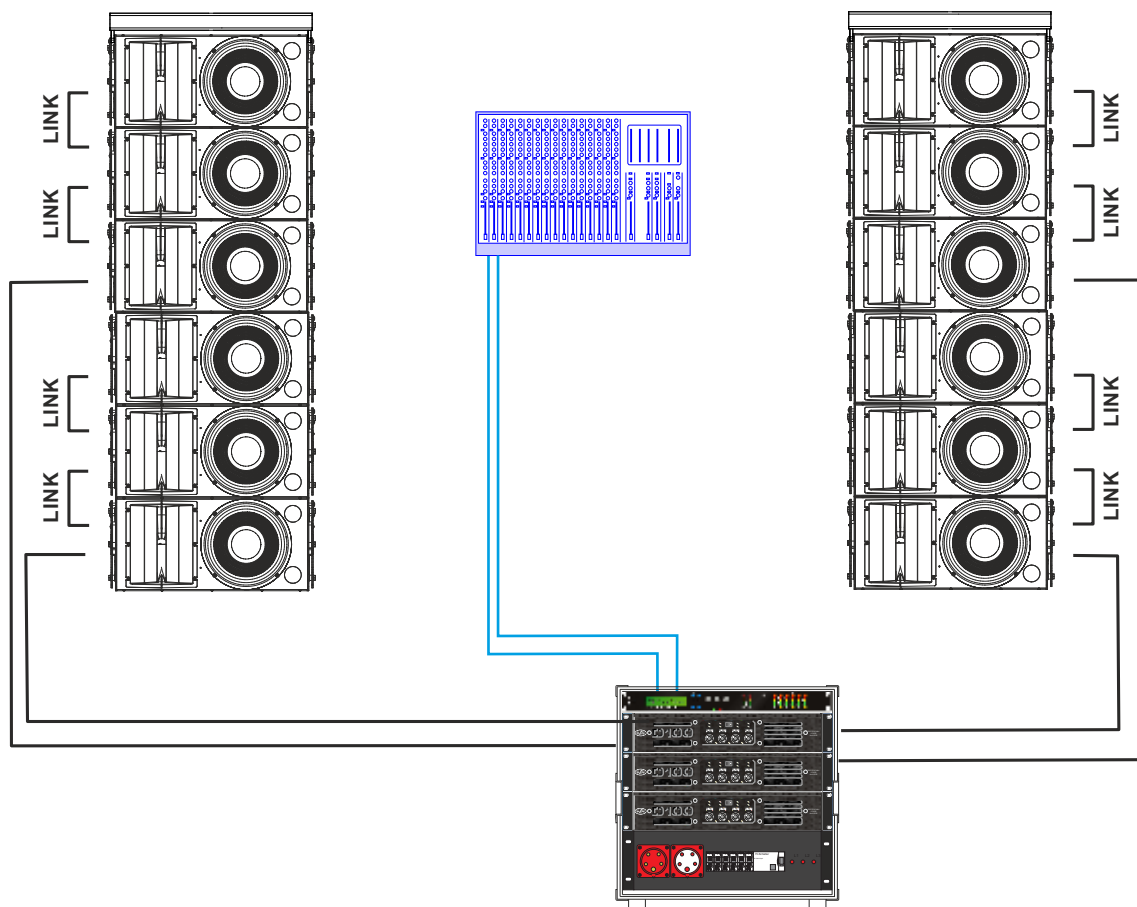
Nominal Power ^f	250 W		
On-axis Freq Range (-10dB):	62 Hz - 22 kHz		
Nominal Impedance:	8 Ohms		
Minimum Impedance:	7,4 Ohms @ 140 Hz		
On-axis Sensitivity 1w/4m ^{fS} :	81,4 dB		
Measured Max SPL at 4m ^u :	107 dB		
Horizontal Coverage (-6dB) ^c :	500Hz, 132°. 1kHz, 91°. 2kHz, 95°. 4kHz, 91°.		
Vertical Coverage (-6dB) ^c :	500Hz, 144°. 1kHz, 84°. 2kHz, 40°. 4kHz, 20°.		
Enclosure Material:	Birch Plywood		
Colour/Finish:	Black / Polyurea		
Transducers/Spare Parts:	LF: 1x 12LNC/GM 12P HF: 1x M75N/GM M-75N		
Weather Resistant Level:	Direct Exposure (DX)		
Environmental Type:	Type B		
Connector:	Barrier strip		
Dimensions (H x W x D):	31,6 x 68,8 x 38,5 cm 12,4 x 27 x 15,2 in		
Net weight:	27 kg (59,5 lb)		
Optional Accessories:	AX-aero12 Rigging Grid, AX-Combo12 Rigging Adapter, PL-12S Steel Transporting Dolly		
DSP2060A EQ:	Frequency	Q	Gain
[Included processing for 1box flat response]	6k11	0,5	-5
	2k52	4,3	-2,9
	6k47	4	-3
	14k3	6,7	-5

^fBased on a 2 hour test using a 6dB crest factor pink noise signal.
^fConventionally, 3dB higher than RMS measure, although this already utilizes a program signal.
^kCorresponds to the signal crests for the test described in ^f.

^fNominal Power based on a 100h test using a 6dB crest factor pink noise signal filtered according to the IEC 60268-1:1985 norm and band-pass filtered with Butterworth 24dB/Oct filters from 89Hz to 11,2kHz.
^fSensitivity and Max SPL measured using a 6dB crest factor pink noise, averaged from 100Hz to 10kHz in 1/3 Octave bands.
^cCoverage measured from 500Hz to 4kHz in Octave bands.
^uObtained by integration over a period of at least 30s.
^fCorrection Flat.

CONFIGURATION

This is an example of one of the possible configurations: **12 x aero 12**



RIGGING SYSTEM

Warning

This manual contains needed information for flying D.A.S. Audio line array systems, description of the elements and safety precautions. To perform any operations related to flying the system, read the present document first, and act on the warnings and advice given. The goal is to allow the user to become familiar with the mechanical elements required to fly the acoustic system, as well as the safety measures to be taken during set-up and teardown.

Only experienced installers with adequate knowledge of the equipment and local safety regulations should fly speaker boxes. It is the user's responsibility to ensure that the systems to be flown (including flying accessories) comply with state and local regulations.

The working load limits in this manual are the results of tests by independent laboratories. It is the user's responsibility to stay within safe limits. It is the user's responsibility to follow and comply with safety factors, resistance values, periodical supervisions and warnings given in this manual. Product improvement by means of research and development is on going at D.A.S. Specifications are subject to change without notice.

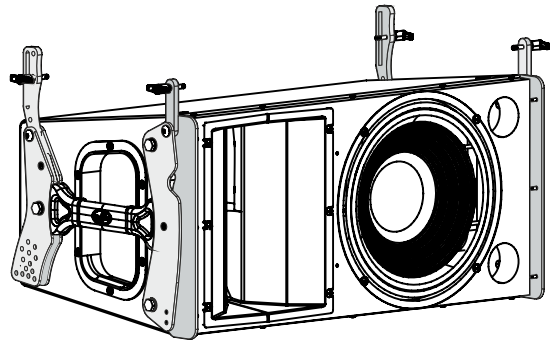
To this date, there is no international standard regarding the flying of acoustic systems. However, it is common practice to apply 5:1 safety factors for enclosures and static elements. For slings and elements exposed to material fatigue due to friction and load variation the following ratios must be met; 5:1 for steel cable slings, 4:1 for steel chain slings and 7:1 polyester slings. Thus, an element with a breaking load limit of 1000 kg may be statically loaded with 200 kg (5:1 safety factor) and dynamically loaded with 142 Kg (7:1 safety factor).

When flying a system, the working load must be lower than the resistance of each individual flying point in the enclosure, as well as each box. Hanging hardware should be regularly inspected and suspect units replaced if in doubt. This is important to avoid injury and absolutely no risks should be taken in this respect. It is highly recommended that you implement an inspection and maintenance program on flying elements, including reports to be filled out by the personnel that will carry out the inspections. Local regulations may exist that, in case of accident, may require you to present evidence of inspection reports and corrective actions after defects were found.

Absolutely no risks should be taken with regards to public safety. When flying enclosures from ceiling support structures, extreme care should be taken to assure the load bearing capabilities of the structures so that the installation is absolutely safe. Do not fly enclosures from unsafe structures. Consult a certified professional if needed. All flying accessories that are not supplied by D.A.S. Audio are the user's responsibility. Use at your own risk.

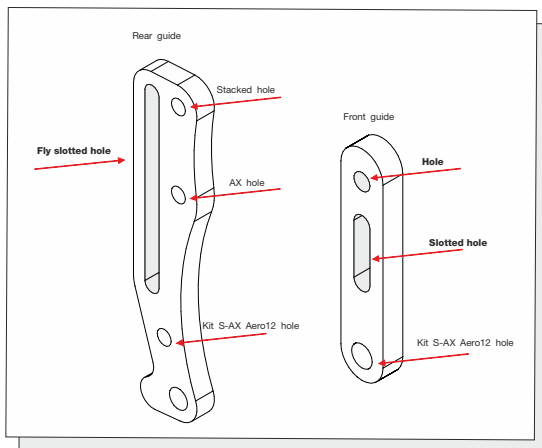
Description

D.A.S. Audio **aero 12** line array systems, include 2 rigging structures on each side of the box. Manufactured from zinc plated steel they are painted black and are affixed to an internal plate with special crop resistant screws. Two special stainless steel guides are assembled to each of the structures, allow for stacking or flying of boxes. Splay angles can be changed from 0° to 3° in 0.5° increments and from 3° to 10° in 1° increments.

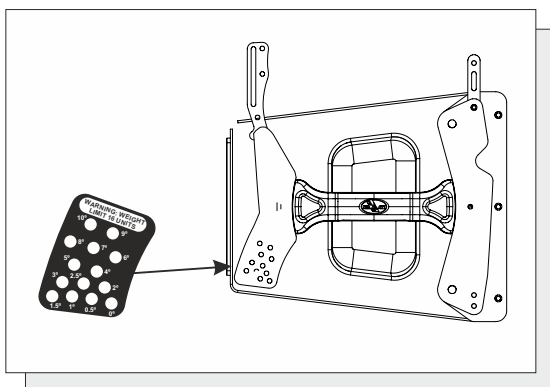
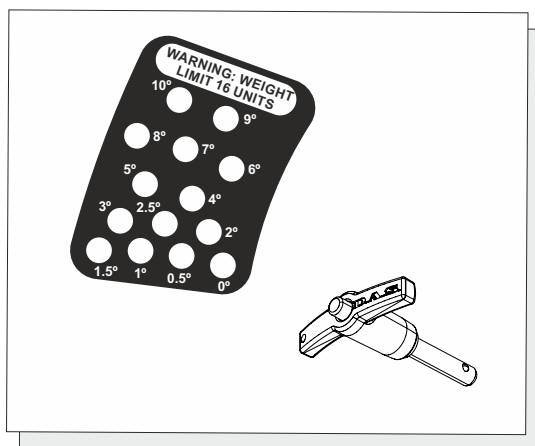


Shown in the next picture, detail of the mechanical parts (rear and front guides) for fly the **aero 12** as well an explanation of the different holes and the performance of them.

In a grey colour the used holes for fly the system.

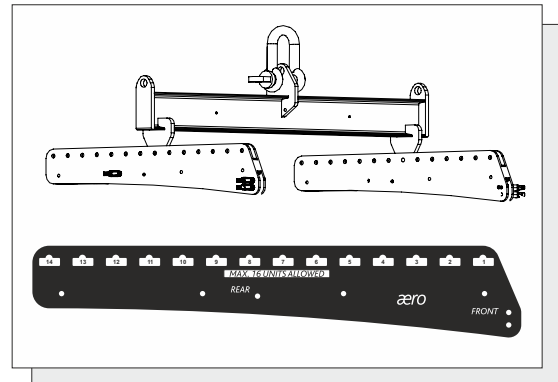


Next illustration shows a detail of the silk screen on the **aero 12** rigging hardware each indicating what angle is obtained. To set the guides, 6mm quick release safety pins should be used.



The **aero 12** includes 6 6mm safety pins which allow coupling the upper **aero 12** with the lower as well with the fly accessory **AX-aero12S2**.

Next illustration show the accessory **AX-aero12S2** and detail of the silk screen of the accessory indicating numbered flying points depending on the desired angle of the system and indicating the max number of the cabinets that can be fly to the accessory on each position.



Refer to the user manual for more information of this accessory, on our website.

The final angle and the fly point are provide by the simulation of the system done with the **Ease Focus** software.

The **EASEFocus** is a free download software.

Using it, it is possible to make the simulations of DAS audio line array systems and applications.

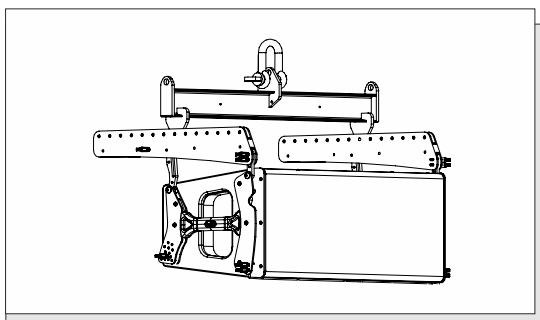
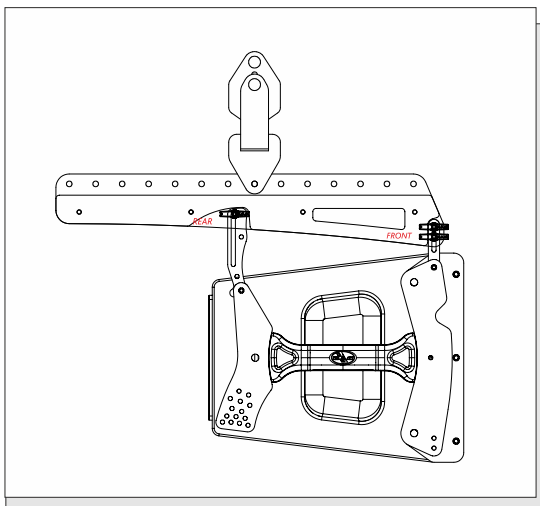
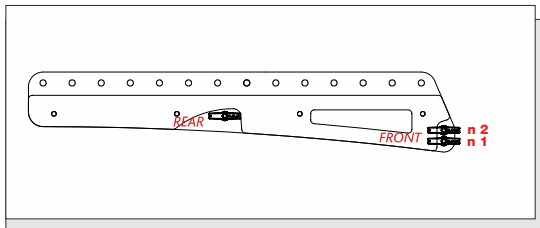
As a result the software will provide the right angles between the cabinets and the fly point of the accessory to obtain the best uniformity in the vertical coverage of the system in the audience area.

Refer to the next link for more information about the software:

<http://focus.afmg.eu/>

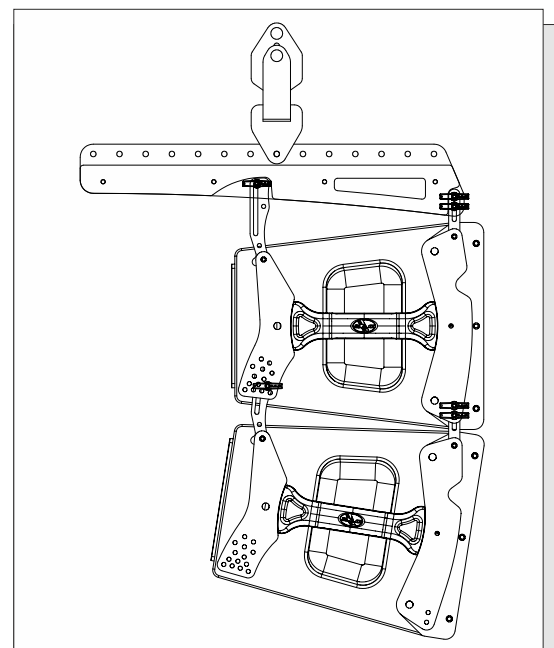
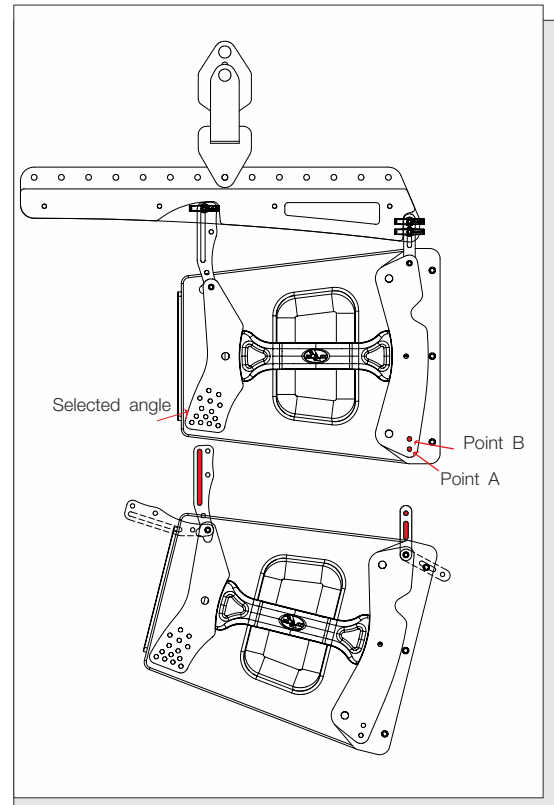
Follow the next steps to setup the *aero 12* line array system:

- 1.- Take out the rear guide of both sides of the cabinet.
- 2.- Take out the front guide of both sides of the cabinet.
- 3.- Put, over the guides, the left and right pannels of the *AX Aero12S2* accessory.
- 4.- Put the pin through the slotted hole of the front guide of the cabinet and the FRONT position n1 of the *AX-Aero12S2*.
- 5.- Put the pin through the hole of the rear guide of the cabinet and the REAR position of the *AX-Aero12S2*.
- 6.- Put the pin through the hole of the front guide of the cabinet and the FRONT position n2 of the *AX-Aero12S2*.
- 7.- Put the central bar of the *AX-Aero12S2* in the fly point provides for the application by the *EaseFocus* software.



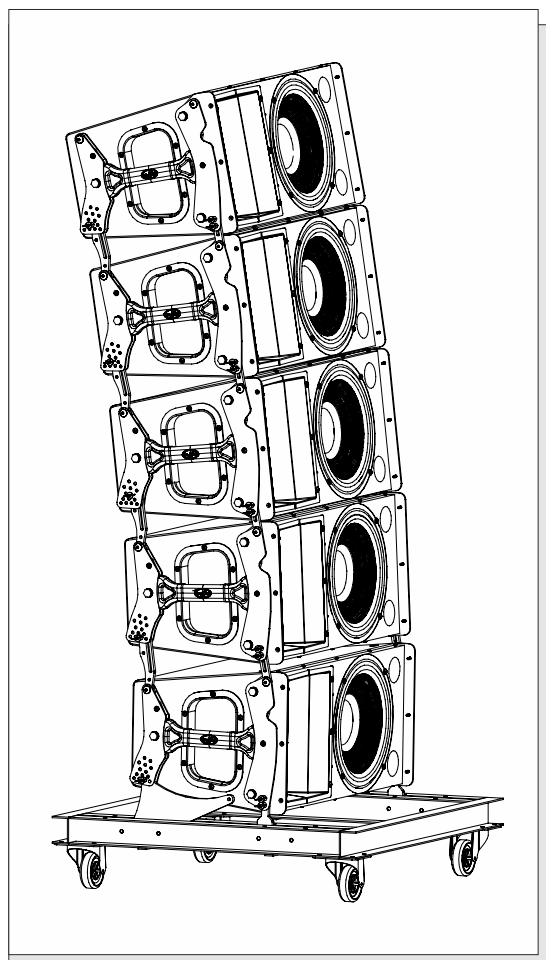
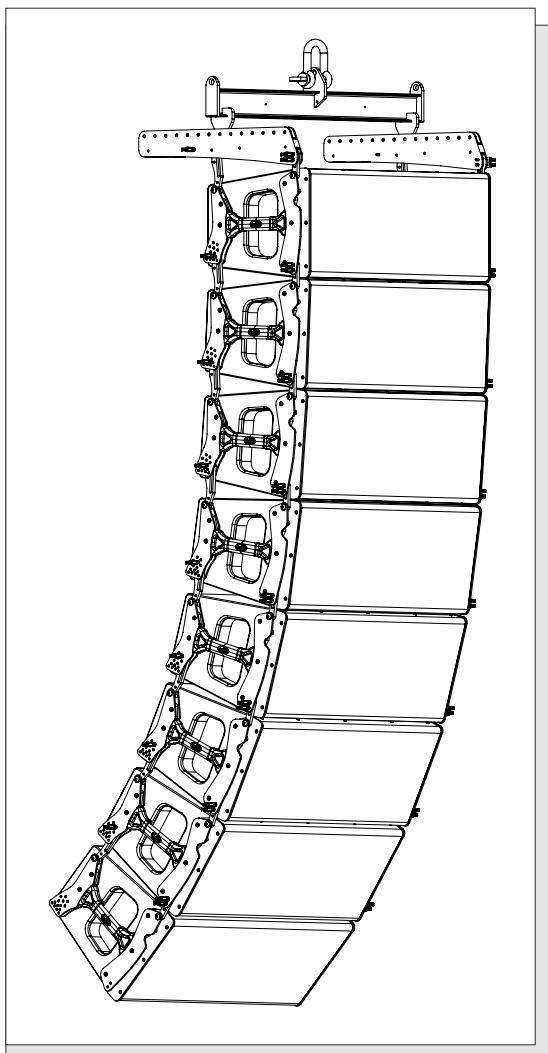
8.- Take out the rear and front guides of the next *aero12* cabinet.

- 9.- Put together the upper side of the 2° *aero 12* and the lower side of the 1° cabinet.
- 10.- Put the pin through the slotted hole of the front guide of the cabinet (Point A).
- 11.- Put the pin through the hole of the rear guide in the designed angle provides by the *EaseFocus* prediction software.
- 12.- Put the pin through the hole of the front guide of the cabinet (Point B).



Repeat the previous steps as many times as cabinets make up the system.

The result should be similar to the next one:



In case of require transport the *aero12* in stacked position, DAS Audio offers the *PL-12S* accessory which allows, using the rear and front guides of the *aero12*, place one cabinet over the other. The angle between the cabinets for transporting should be 0°.

For more information about *PL-12S*, see your user's manual, on our website.

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
1 - No sound from any units.	1.1 - No signal present in the amplifier	1.1.1 - Check that the amplifier is on. 1.1.2 - Check that the gain is set above its minimum setting. 1.1.3 - Check that there is a signal to your amplifier from your mixer.
	1.2 - Defective cable.	1.2.1 - Check that the cable from the sound source to the UNIT is connected correctly. Replace the cable if defective. 1.2.2 - Check that none of the connected cables are cut or frayed.
	1,3 - High number of speakers connected in the same amplifier's channel.	1,3,1 - Check the minimum impedance requirements of your amplifier.
2 - NO sound from one unit.	2.1 - No signal present in the UNIT..	2.1.1 - Check that the cable between the UNITS is connected correctly. Replace the cable if defective. 2.1.2 - Check the balance control on the mixer.
3 - Poor stereo image or weak bass output	3.1 - Wrong connection	3.1.1 - Check the polarities (+/-) and be sure that all the speakers are well connected.

www.dasaudio.com



D.A.S. AUDIO, S.A.

C/. Islas Baleares, 24
46988 Fuente del Jarro
Valencia, SPAIN
Tel. 96 134 0525
Tel. Intl. +34 96 134 0860
Fax 96 134 0607
Fax Intl. +34 96 134 0607

D.A.S. AUDIO OF AMERICA, INC.

Sunset Palmetto Park
6816 NW 77th Court.
Miami, FL. 33166 - U.S.A.
TOLL FREE: 1-888DAS4USA
Tel. +1 305 436 0521
Fax +1 305 436 0528

D.A.S. AUDIO ASIA PTE. LTD.

25 Kaki Bukit Crescent #01-00/02-00
Kaki Bukit Techpark 1
Singapore 416256
Tel. +65 6742 0151
Fax +65 6742 0157